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July 24, 2012

Sean Sheldrake  
EPA, Region 10  
1200 Sixth Avenue, M/S ECL-111  
Seattle, Washington 98101

Re: NW Natural Proposal to Complete Additional Field Visual Surveys at the Gasco  
Sediments Site during August and September 2012

Project Number: 000029-02.28

Dear Mr. Sheldrake:

This letter provides a description of the additional field visual surveys to monitor the potential occurrence of visible sheens across the Gasco Sediments Site discussed by Anchor QEA, LLC (Anchor QEA), on behalf of NW Natural and the U.S. Environmental Protection Agency (EPA). As you are aware, several of the remedial alternatives evaluated in the Draft Engineering Evaluation and Cost Analysis for the Gasco Sediments Site (Draft EE/CA, Anchor QEA 2012) incorporate engineered and active caps in areas outside of the federal navigation channel. The Draft EE/CA determines that such caps are feasible at an engineering level of analysis appropriate for the current pre-design phase of the project. As discussed in the Draft EE/CA, these caps would need to be designed to control dense non-aqueous phase liquid (DNAPL) transport that may occur in some areas. The survey activities proposed in this letter will provide information necessary to support the active cap design in the next phases of the project to be protective of potential ebullition-facilitated DNAPL transport. The ebullition process is expected to be most active during periods of low river stage and warmer weather, which are typical of summer conditions in the Willamette River. Therefore, to keep the design process on schedule, it is necessary to collect this information now rather than potentially waiting until summer 2013.

The objectives of the additional field surveys are to:

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- Identify areas of the Gasco Sediment Site that may exhibit sheen and approximate the sheen size.
  - Identify areas of the Gasco Sediment Site that may exhibit ebullition, qualitatively define the rate of ebullition, and map the ebullition locations, where possible.
  - Identify factors that could affect ebullition and sheen generation.

Sheen monitoring has been conducted previously at the Gasco Sediments Site, in an area of the site near the Siltronic Corporation (Siltronic) outfall that extends into the Willamette River. Sheen monitoring was conducted beginning in 2007, when a sheen was identified that appeared to originate from an area 25 to 30 feet north of the Siltronic outfall (shown on the attached Figure 1). A sheen containment system (an adsorbent boom) was installed in the area and weekly sheen monitoring was conducted in this area until 2009. The results of the monitoring were submitted to Oregon Department of Environmental Quality (ODEQ). Variable degrees of sheening were identified during 15 percent of the monitoring periods (total of 149 observations). Refer to the attached letter regarding “Proposed Revision to Environmental Controls and Sheen Monitoring at the Gasco/Siltronics Property Boundary” from Carl Stivers of Anchor QEA to Dana Bayuk of ODEQ dated October 5, 2009, for additional detail. The enlarged sheen containment system and monitoring protocols described in this letter are currently in place at the Gasco Sediments Site.

NW Natural has also been performing visual monitoring at the Gasco Sediments Site along the shoreline area in the vicinity of the pilot cap placed as part of the EPA-required 2005 Removal Action. This monitoring was initiated in December 2005 in accordance with the *Monitoring and Reporting Plan – Post-construction Monitoring* (MARP; Anchor 2006) following completion of the Removal Action. The MARP included visual monitoring in the vicinity of the pilot cap constructed as part of the 2005 Removal Action to monitor the potential release of sheen and/or product in or around the pilot cap area. Visual monitoring of the pilot cap area (in-water and shoreline) was conducted from December 2005 to September 2006. This monitoring identified no sheens or product. Visual observations were continued in this same area approximately monthly from September 2006 to the present as well as continuously during the other post-construction long-term monitoring activities performed from 2006 to 2010. No sheens or product were observed during any of these monitoring events, as described in the Year 0 through Year 3 annual monitoring reports (Anchor 2007 and 2008; Anchor QEA 2009, 2010) and each monthly progress report submitted since January 2011.

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The additional visual monitoring will be performed throughout the Gasco sediments project area. The objective of this additional visual monitoring is to visually map any sheens and ebullition sources in the Gasco Sediment Site. Three comprehensive surveys will be conducted in the August and September period and include visual observations across the range of tidal conditions (e.g., ebb, slack, and flood tides) in a single day. The results of the historical monitoring identified that the presence of sheen is not consistent over time, even in areas of historical sheen generation, so three events are considered appropriate to adequately characterize the potential for sheen generation and/or ebullition at the Gasco Sediments Site.

Anchor QEA personnel will conduct each event from the waterside by boat and from the top of the dock and catwalk structures if time permits during the target tidal cycle. The locations of observed sheen and ebullition will be recorded by a handheld global positioning system (GPS). Sheen size will be described consistent with the sheen observation protocols currently used at the Gasco Sediment Site, which are:

- *Blossom* – Observations of the process of a very small amount of product (i.e., a small drop) coming to the water surface and creating a small area (less than 1 to 3 feet in diameter) of sheen.
- *Contiguous Sheen* – Observations of a larger patch of sheen observed on the surface of the water; and an approximate dimension of the patch will be given.
- *Spotty Sheen* – Observations of larger areas of sheen that are comprised of many smaller patches (less than 1 to 3 feet in diameter) of sheen that may merge or separate over time.
- *Small Spots of Sheen* – Observations of isolated small patches (less than 1 to 3 feet in diameter), potentially representing a recent blossom.

In areas where ebullition is identified, the frequency will be described as irregular, frequent, or continuous with descriptions of these categories in the field notes. If observed, active ebullition may also be captured on video (via handheld camera) to provide additional information on ebullition rates and magnitude.

Field surveyors will also record any factors potentially affecting sheen or ebullition (e.g., temperature, dock and/or other vessel operations, river levels, wave action, or adjacency to structures). The field form to be used during the field survey is attached. The health and safety protocols outlined in the Anchor QEA Health and Safety Plan, Attachment 2 to the Final Data

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Gaps Quality Assurance Project Plan (QAPP; Anchor QEA 2010) will be followed during the survey events.

At your earliest convenience, please inform NW Natural if there is EPA approval to complete the additional monitoring activities described herein so that completion of the first monitoring event can take place in early August 2012. The survey results would be submitted to EPA as part of the Preliminary Design Report following EPA approval of the Final EE/CA. Any additional sheen and ebullition characterization activities that may be necessary to support the remedial design evaluations would be discussed with EPA at a later time.

Sincerely,



Ryan Barth  
Anchor QEA, LLC

**Cc:**

Bob Wyatt, NW Natural  
Patty Dost, Pearl Legal Group  
Myron Burr, Siltronic Corporation  
James Peale, Maul Foster & Associates  
Alan Gladstone, Davis Rothwell Earle & Xochihua  
Lance Peterson, CDM Smith  
Carl Stivers, Anchor QEA  
John Edwards, Anchor QEA  
Ben Hung, Anchor QEA  
Kim Slinski, Anchor QEA

**List of Attachments**

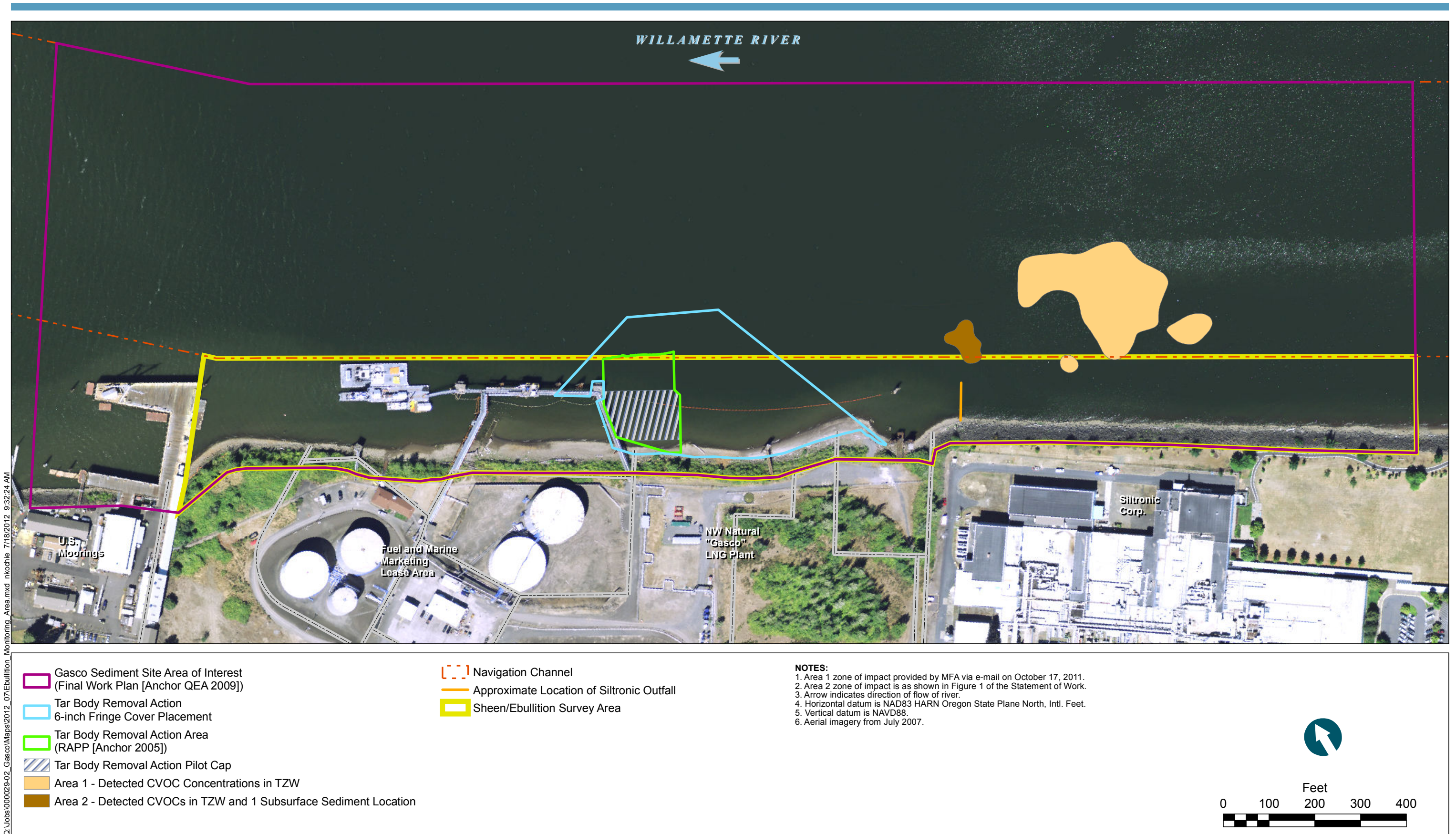
Attachment 1 Figure 1 – Field Visual Survey Area  
Attachment 2 Proposed Revision to Environmental Controls and Sheen Monitoring at the  
Gasco/Siltronics Property Boundary  
Attachment 3 Gasco Sediments Visual Survey - Observation Form

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# ATTACHMENT 1

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## ATTACHMENT 2

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Anchor QEA, LLC  
1423 3<sup>rd</sup> Avenue, Suite 300  
Seattle, Washington 98101  
Phone 206.287.9130  
Fax 206.287.9131

## Memorandum

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**To:** Dana Bayuk, ODEQ

**From:** Carl Stivers, Anchor QEA, LLC

**CC:** Bob Wyatt, NW Natural  
Patty Dost, Pearl Legal Group  
John Edwards, Anchor QEA, LLC  
Tim Stone, Anchor QEA, LLC  
Rob Ede, Hahn and Associates

**Date:** October 5, 2009

**Re:** Proposed Revision to Environmental Controls and Sheen Monitoring at the  
Gasco/Siltronics Property Boundary

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The purpose of this memo is to provide a summary report of NW Natural activities associated with the containment boom deployed in the Willamette River. The memo concludes with recommendations on future boom deployment and reporting plans.

### Background

As described in the January 25, 2008 Memorandum to Oregon Department of Environmental Quality (DEQ), Anchor QEA, LLC (Anchor QEA) field staff and DEQ staff identified a large, heavy sheen originating from 25 to 30 feet north of the second to last pair of channel ward pilings marking the alignment of the northern Siltronic outfall within the Willamette River on Thursday September 6, 2007. Continued visual observations conducted by Anchor QEA staff from September 10 through September 21, 2007 revealed additional but significantly smaller sheen occurrences which appeared to be originating from the same general area.

On September 27, 2007 Anchor QEA submitted a plan for ongoing visual monitoring, boom maintenance, and monthly reporting in the area described above. In an email dated December 27, 2007 DEQ provided comments on the September plan and requested submittal of a revised plan. Anchor QEA responded to DEQ's comments in an email dated January 3, 2008 and submitted a revised plan dated January 25, 2008. To date, Anchor QEA has not received comments or approval of the revised plan.



On December 24, 2007, the National Response Corporation (NRC) installed a temporary containment system around the perimeter of the sheen generation area described above and shown in Figure 1 (attached). The containment system is composed of an inner layer of 5-inch disposable sorbent floating boom that is surrounded by an outer floating oil-skirt containment boom. The temporary containment structure was installed with the intention of containing sheens similar in magnitude to the September 6, 2007 event.

### **Visual Observations, Inspections, and Maintenance of the Containment System**

Visual observation and inspection of the containment system is being conducted once per week or more frequently during coincidental site visits by either NW Natural or NW Natural's representatives (staff from Anchor QEA and Hahn and Associates, Inc). Maintenance of the containment system is being conducted as needed by NRC. Reports of sheen observation and boom maintenance have been submitted to DEQ. Table 1 summarizes the visual observations, inspections, and maintenance events completed from December 27, 2007 through June 30, 2009. The sheen observations in Table 1 were assessed and the findings are listed below:

1. a total of 149 observation events were completed
2. sheen was observed within and/or around the containment system on 23 occasions or 15% of the time
3. the majority of observed sheens were spotty and transitory, with only 4 events characterized as contiguous in nature, and three of the four contiguous sheens were observed outside the containment system
4. Of the 23 sheen observations, the sheen was located outside the containment boom 43% of the time
5. average river elevation for the period was 7.98 feet (City of Portland datum)
6. average river elevation when sheens were observed was 6.16 feet
7. average river elevation when sheens were not observed was 8.33 feet
8. seasonally, sheen was observed 57% of the time during seasonal low river conditions, (e.g. August through January)
9. 96% of the observed sheens were identified during light wave action

During operation of the containment system there have been no observations of sheen similar in magnitude to the one observed on September 6, 2007 which was characterized as heavy with estimated dimensions of approximately 25 to 35 feet wide by 400 to 500 feet long. Just prior to

the September 6 event, pilings in the same area of the sheen generation sustained damage from an unknown event. It could not be determined whether the damage to the pilings caused a disturbance to the subsurface sediment that resulted in the observed sheen. The largest sheen observed since September 6, 2007 occurred on August 4, 2009. The August 4 sheen measured approximately 10 feet x 100 feet, and will be described in the forthcoming third quarter 2009 sheen report.

### **Proposed Boom Deployment Plan**

Given the infrequency and generally small size of observed sheens in the area, NW Natural proposes to discontinue the preparation of observation logs and quarterly reports to DEQ, but to continue operation and maintenance of the boom system. The details of this proposed change to the program are described in the remainder of this section.

In late summer 2009 observations, near-shore sheen has been noted both up and downstream of the current boom area. These observations will be described in the third quarter sheen report. Although these have been generally very small and short-lived sheens, NW Natural proposes to extend the current boom system to cover additional shoreline both up and downstream of the current boom. The proposed expanded boom area is shown on Figure 1.

The proposed boom configuration should be effective in containing the sheens generated in this area. NRC will continue to inspect the boom system weekly, make repairs when needed, and replace the adsorbent material at appropriate frequencies. Given that NRC will be maintaining the boom system, it is not necessary to continue the shoreline observations and associated reporting that has occurred to date. Therefore the fourth quarter 2009 report would include sheen observations for October 2009 and is proposed to be the last report related to continued operation of the boom system.

In summary, NW Natural proposes the following boom deployment program:

1. The boom system would be extended upriver and downriver in a configuration similar to the one shown on Figure 1.
2. NRC (marine service contractor) will conduct weekly site visits to ensure that the boom is mechanically sound, and to conduct maintenance as needed (i.e. removal of debris, repair or replacement of booms, etc.).

3. NRC will replace sorbent boom as needed to maintain effective sorption of sheen generated within the containment structure.
4. “Weekly” and “coincidental” observation events; and periodic reporting of sheen observations to DEQ will be discontinued. A fourth quarter report of October 2009 results would be the final report submitted to DEQ.

With DEQ concurrence the above-described boom deployment program would start November 1, 2009.

**Attachments:**

**Table 1**--Summary of Visual Sheen Observations at Gasco/Siltronic Property Boundary

**Figure 1**—Sheen Containment Area Configuration Map

Table 1  
Summary of Visual Sheen Observations at Gasco/Siltronic Property Boundary  
12/27/07-6/30/09

Visit No.	Monitoring Period	Date	Time Started	Time Concluded	Sheen Observed?	Inside or Outside Containment System?	Location	Dimensions	Scope/Nature	Boom Maintenance Issues	Debris Issues	Actions Taken	River Elevation	Daily Low	Daily High	Datum	Wave Action
1	Weekly	12/27/2007	9:00	12:00	No	--	--	--	--	Upriver anchor point slipped causing containment structure to drift against Siltronic outfall. Along upriver leg of containment, small section of sorbent boom disconnected.	None	NRC contacted to reset anchor and reconnect sorbent boom. NRC made necessary adjusments on 12/31/07.	10.2	9.4	11.4	COP	Light
2	Weekly	1/4/2008	14:00	16:30	No	--	--	--	--	None	None	Containment system functioning properly.	10.1	7.65	10.19	COP	Moderate
3	Coincidental	1/8/2008	8:30	16:00	No	--	--	--	--	Along channelward leg of containment, small section of sorbent boom outside oil skirt boom.	Small amount of woody debris inside containment area and caught in boom, not affecting boom function.	NRC contacted to correct sorbent boom.	--	9.47	11.44	COP	Moderate-Heavy
4	Coincidental	1/10/2008	11:57	12:20	No	--	--	--	--	None	Two pieces of woody debris ~4"x5' inside containment area, not affecting boom function.	Containment system functioning properly.	10.86	10.52	11.22	COP	Light
5	Coincidental	1/15/2008	14:00	16:30	No	--	--	--	--	Along downriver leg of containment, ~5 feet of sorbent boom outside oil skirt boom.	None	NRC contacted to attach sorbent boom to grommets on oil skirt boom to keep in place for longer duration.	10.2	9.62	10.68	COP	Light
6	Weekly	1/17/2008	9:30	12:00	Yes	Inside	From downriver leg of containment extending ~80 ft along shoreline.	35'x80'	Spotty	Boom structure opened and closed by NRC to allow access for sediment core collection vessel.	Along downriver leg of containment, wood debris caught between sorbent and oil skirt boom.	NRC opened and closed boom to allow access for sampling, adjusted boom, and cleared wood debris from containment system.	9.54	8.83	10.15	COP	Light
7	Coincidental	1/22/2008	10:00	12:00	No	--	--	--	--	None	None	Containment system functioning properly.	7.39	7.07	9.87	COP	Light
8	Weekly	1/25/2008	10:00	12:00	No	--	--	--	--	None	None	Containment system functioning properly.	8.17	7.2	9.3	COP	Light
9	Weekly	2/1/2008	15:30	17:30	No	--	--	--	--	Along upriver leg of containment, small section of sorbent boom disconnected.	None	NRC contacted to reconnect sorbent boom. NRC made necessary adjusments on 2/7/08.	7.5	7.13	9.31	COP	Light
10	Weekly	2/8/2008	15:00	16:00	No	--	--	--	--	Along downriver leg of containment, two sections of sorbent boom missing (~30 ft total).	Small wood debris accumulation inside containment structure.	NRC contacted to reconnect sorbent boom.	7.95	7.81	9.84	COP	Light-Moderate
11	Weekly	2/12/2008	15:00	17:00	No	--	--	--	--	Along downriver leg of containment, section of sorbent boom disconnected.	Small amount of wood debris inside of containment and caught in boom.	NRC contacted to reconnect sorbent boom. NRC made necessary adjusments on 2/13/08.	7.5	7.3	9.31	COP	Light
12	Coincidental	2/15/2008	12:00	12:30	No	--	--	--	--	None	None	Containment system functioning properly.	9.34	7.25	9.42	COP	Light
13	Coincidental	2/18/2008	8:00	11:00	No	--	--	--	--	None	None	Containment system functioning properly.	6.41	5.61	8.78	COP	Light
14	Coincidental	2/19/2008	8:30	8:40	No	--	--	--	--	None	None	Containment system functioning properly.	7.605	5.025	8.425	COP	Light
15	Coincidental	2/20/2008	11:20	11:35	Yes	Inside	From downriver leg of containment extending ~40 ft along shoreline.	4-6' x 35-40'	Contiguous	None	Along upriver leg outside of containment, small wood debris accumulation not affecting boom function.	Containment system functioning properly.	5.335	5.065	7.215	COP	Light
16	Coincidental	2/22/2008	9:11	9:26	No	--	--	--	--	None	Inside and outside of upriver leg of containment, wood debris accumulation.	Containment system functioning properly.	5.715	4.365	7.285	COP	Moderate
17	Coincidental	2/25/2008	10:30	10:45	No	--	--	--	--	Along downriver leg of containment, small section of sorbent boom caught underneath oil skirt boom.	None	Containment system functioning properly.	5.215	3.495	6.235	COP	Light
18	Coincidental	2/26/2008	10:40	10:55	No	--	--	--	--	Along downriver leg of containment, sorbent and oil skirt boom separated. Small section of sorbent boom still caught underneath oil skirt boom.	None	Containment system functioning properly.	4.935	3.025	5.755	COP	Light
19	Coincidental	2/27/2008	11:20	12:00	No	--	--	--	--	Small section of sorbent boom still underneath oil skirt boom.	None	NRC contacted to reset sorbent boom and remove woody debris.	4.925	3.135	5.805	COP	Light
20	Weekly	2/28/2008	9:30	10:30	No	--	--	--	--	None	None	Containment system functioning properly.	5.475	3.085	5.525	COP	Light
21	Weekly	3/3/2008	13:00	17:00	No	--	--	--	--	Along downriver leg of containment, section of sorbent boom disconnected.	Along downriver leg of containment, logs and wood debris accumulation in and around boom.	NRC contacted to repair sorbent boom and remove woody debris.	7.12	4.72	7.39	COP	Moderate
22	Weekly	3/13/2008	10:15	11:00	No	--	--	--	--	Along downriver leg of containment near shoreline, small sections of sorbent boom out of place or missing.	Along downriver leg inside containment near shore, small wood debris accumulation.	NRC contacted to repair sorbent boom and remove woody debris. NRC made necessary adjusments on 3/14/08.	--	--	--	COP	Light
23	Weekly	3/17/2008	13:00	13:30	No	--	--	--	--	None	None	Containment system functioning properly.	7.72	6.45	8.68	COP	Light-Moderate
24	Coincidental	3/17/2008	13:55	14:05	No	--	--	--	--	None	None	Containment system functioning properly.	8.32	6.45	8.68	COP	Light

Table 1  
Summary of Visual Sheen Observations at Gasco/Siltronic Property Boundary  
12/27/07-6/30/09

Visit No.	Monitoring Period	Date	Time Started	Time Concluded	Sheen Observed?	Inside or Outside Containment System?	Location	Dimensions	Scope/Nature	Boom Maintenance Issues	Debris Issues	Actions Taken	River Elevation	Daily Low	Daily High	Datum	Wave Action
25	Weekly	3/24/2008	8:30	9:45	Yes	Inside	From downriver leg of containment extending ~50 ft along shoreline.	8'x50'	Spotty	Along downriver leg of containment, section of sorbent boom appears dark/stained.	None	NRC contacted to replace section of stained sorbent boom during next scheduled maintenance operation.	5.895	4.035	6.345	COP	Light
26	Coincidental	3/24/2008	11:00	11:05	No	--	--	--	--	None	None	Containment system functioning properly.	5.895	4.035	6.345	COP	Light
27	Weekly	4/1/2008	9:00	10:00	No	--	--	--	--	Along downriver leg of containment, section of sorbent boom disconnected.	None	NRC contacted to repair and replace sorbent boom and to reinforce with nylon ties at connection points. NRC made necessary adjustments and added 4 bales on 4/7/08.	6.175	5.345	7.205	COP	Light
28	Weekly	4/11/2008	15:00	17:00	No	--	--	--	--	None	None	Containment system functioning properly.	6.84	5.95	8.59	COP	Light
29	Weekly	4/17/2008	8:30	9:30	Yes	Inside	From downriver leg of containment extending ~12 ft along shoreline.	3'x12'	Spotty	None	Wood debris inside containment, not affecting boom function.	Containment system functioning properly.	8.4	5.88	7.57	COP	Light
30	Weekly	4/23/2008	8:15	8:30	No	--	--	--	--	Along upriver leg of containment, small section of sorbent boom disconnected.	None	NRC contacted to repair sorbent boom. NRC repaired sorbent boom and added 4 bales on 5/2/08.	9.16	7.89	9.34	COP	Moderate
31	Weekly	4/29/2008	13:15	14:00	No	--	--	--	--	None	None	Containment system functioning properly.	8.1	7.38	8.33	COP	Light
32	Weekly	5/6/2008	9:30	10:45	No	--	--	--	--	None	Along downriver leg of containment, large log caught in boom and misc. wood debris scattered inside downriver end of containment area due to extreme high tides.	NRC contacted to clear wood debris within containment system.	10.1	8.63	10.93	COP	Light
33	Weekly	5/14/2008	8:00	10:00	No	--	--	--	--	None	Along upriver (outside) and downriver (inside) legs of containment, wood debris accumulation.	NRC contacted to clear wood debris from containment structure. NRC cleared wood debris and adjusted containment system on 5/20/08.	11.01	9.94	11.66	COP	Light
34	Weekly	5/19/2008	15:30	17:30	No	--	--	--	--	None	Along downriver leg inside containment, small amount of debris accumulation.	Containment system functioning properly.	15.55	14.12	15.89	COP	Moderate
35	Weekly	5/30/2008	10:00	11:00	No	--	--	--	--	Along downriver leg of containment, shoreward connection of boom has 4-5 ft gap due to high water.	Along downriver leg outside of containment, wood debris accumulation.	NRC contacted to clear wood debris and close gap in containment.	16.2	15.96	16.38	COP	Moderate
36	Weekly	6/2/2008	13:00	14:00	No	--	--	--	--	Along downriver leg of containment, shoreward connection of boom has 6-8 ft gap due to extreme high water.	Along upriver leg outside of containment, wood debris accumulation.	NRC contacted to clear wood debris and close gap in containment. NRC removed woody debris and adjusted containment system at downriver end on 6/3/08.	16.4	16.28	16.65	COP	Light
37	Weekly	6/11/2008	16:00	18:00	No	--	--	--	--	None	Along upriver leg outside of containment, wood debris accumulation.	NRC contacted to clear wood debris.	14.85	14.15	15.04	COP	Moderate
38	Weekly	6/16/2008	11:00	13:00	No	--	--	--	--	None	Along downriver leg of containment, small amount of wood debris caught in and around boom.	Containment system functioning properly.	12.29	11.95	13.08	COP	Light
39	Coincidental	6/17/2008	10:00	11:00	No	--	--	--	--	None	Along upriver leg of containment, large log caught in boom.	NRC contacted to clear log. NRC removed woody debris and adjusted containment system on 6/19/08.	13.08	12.46	13.26	COP	Light
40	Weekly	6/25/2008	10:00	11:30	No	--	--	--	--	None	Along upriver and downriver legs of containment, small amounts of wood debris caught in and around boom.	Containment system functioning properly.	12.85	12.41	13.28	COP	Moderate
41	Weekly	7/1/2008	9:00	10:00	No	--	--	--	--	Downriver-shoreward anchor point shifted upriver in May/June to accommodate periods of high water.	Along downriver leg of containment, small wood debris caught in boom.	NRC contacted to removed wood debris and relocate anchor point. NRC made necessary adjustments on 7/10/08.	12.68	11.82	13.43	COP	Light
42	Coincidental	7/7/2008	9:39	9:50	No	--	--	--	--	None	None	Containment system functioning properly.	10.57	9.48	10.8	COP	Moderate
43	Weekly	7/7/2008	10:00	11:20	No	--	--	--	--	None	Wood debris inside containment area, not affecting boom function.	Containment system functioning properly.	10.66	9.48	10.8	COP	Light
44	Coincidental	7/8/2008	8:00	9:15	No	--	--	--	--	None	None	Containment system functioning properly.	10.22	9.1	10.74	COP	--
45	Weekly	7/14/2008	14:00	15:30	No	--	--	--	--	None	None	Containment system functioning properly.	6.81	5.94	9.08	COP	Moderate
46	Coincidental	7/15/2008	16:45	17:00	No	--	--	--	--	None	None	Containment system functioning properly.	7	5.94	8.58	COP	Light



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Summary of Visual Sheen Observations at Gasco/Siltronic Property Boundary  
12/27/07-6/30/09

Visit No.	Monitoring Period	Date	Time Started	Time Concluded	Sheen Observed?	Inside or Outside Containment System?	Location	Dimensions	Scope/Nature	Boom Maintenance Issues	Debris Issues	Actions Taken	River Elevation	Daily Low	Daily High	Datum	Wave Action
47	Coincidental	7/16/2008	10:00	10:15	No	--	--	--	--	None	None	Containment system functioning properly.	7.48	6.25	9.1	COP	Light
48	Weekly	7/21/2008	15:00	16:00	No	--	--	--	--	None	None	Containment system functioning properly.	6.22	5.9	8.46	COP	Light
49	Coincidental	7/21/2008	11:03	11:20	No	--	--	--	--	None	None	Containment system functioning properly.	7.4	5.9	8.46	COP	Light
50	Coincidental	7/24/2008	12:00	13:00	No	--	--	--	--	None	None	Containment system functioning properly.	6.43	5.06	8.66	COP	Light
51	Weekly	7/28/2008	11:45	12:45	No	--	--	--	--	None	None	Containment system functioning properly.	5.75	5.73	8.92	COP	Light
52	Coincidental	7/28/2008	14:30	14:45	No	--	--	--	--	None	None	Containment system functioning properly.	6.36	5.73	8.92	COP	Light
53	Coincidental	7/29/2008	12:00	12:30	No	--	--	--	--	None	None	Containment system functioning properly.	5.96	5.79	9.26	COP	Moderate
54	Coincidental	8/1/2008	11:50	12:00	No	--	--	--	--	None	None	Containment system functioning properly.	7.54	6.34	10.25	COP	Light
55	Weekly	8/4/2008	12:50	13:05	No	--	--	--	--	None	None	Containment system functioning properly.	6.21	4.84	8.61	COP	Moderate
56	Coincidental	8/4/2008	9:32	9:42	No	--	--	--	--	None	None	Containment system functioning properly.	8.18	4.84	8.61	COP	Light
57	Coincidental	8/6/2008	13:40	13:50	Yes	Outside	Along downriver leg of containment extending ~10 ft from shoreline.	2.5'x10'	Spotty; patches ~3" in diameter	None	None	Containment system functioning properly.	3.15	2.03	5.78	--	Light
58	Coincidental	8/7/2008	9:15	9:30	Yes	Outside	Near upriver-channelward corner of containment system.	2'x2'	2 Spotty areas; patches <1" in diameter	None	None	Containment system functioning properly.	6.625	4.375	7.375	COP	None
59	Coincidental	8/12/2008	11:04	11:16	Yes	Inside	Near downriver-shoreward corner of containment system.	6'x20'	Spotty; 4 patches <2" in diameter, transient	None	None	Containment system functioning properly.	4.64	4.33	7.62	COP	Light
60	Coincidental	8/13/2008	11:11	11:22	No	--	--	--	--	None	None	Containment system functioning properly.	2.08	1.64	4.85	--	Light
61	Coincidental	8/14/2008	10:15	10:30	No	--	--	--	--	Downriver-channelward anchor point appeared unattached causing containment system to drift shoreward.	None	NRC contacted to repair anchor point and reposition containment system.	5.22	4.16	7.92	COP	Light
62	Weekly	8/15/2008	13:00	13:30	No	--	--	--	--	Downriver-channelward anchor point appeared unattached causing containment system to drift shoreward.	None	Containment system functioning properly.	4.58	4.28	7.97	COP	Moderate
63	Weekly	8/20/2008	15:15	16:00	No	--	--	--	--	None	None	NRC repaired anchor point and repositioned downriver / shoreward anchor point on 8/19/08 so containment system encompassed area where recent sheen was observed.	2.08	2	5.95	--	Moderate
64	Coincidental	8/22/2008	10:28	10:45	No	--	--	--	--	None	None	Containment system functioning properly.	7	4.67	8.79	COP	Moderate
65	Weekly	8/29/2008	7:00	8:00	No	--	--	--	--	None	None	Containment system functioning properly.	7.49	4.77	8.8	COP	Light
66	Coincidental	9/8/2008	13:00	13:15	No	--	--	--	--	None	None	Containment system functioning properly.	1.06	-0.07	3.69	--	Light
67	Coincidental	9/9/2008	13:00	13:10	No	--	--	--	--	None	None	Containment system functioning properly.	1.47	0.65	3.86	--	Light
68	Weekly	9/9/2008	17:00	18:00	No	--	--	--	--	Downriver-shoreward anchor point not in proper position.	None	NRC contacted to reset anchor point.	--	--	--	--	Light
69	Weekly	9/15/2008	13:30	16:30	No	--	--	--	--	Sorbent boom breaking down and soiled in appearance. Along downriver leg of containment system, small section of sorbent boom outside of oil skirt boom.	None	NRC contacted to replace entire sorbent boom. NRC replaced 11 bales on 9/16/08. CH2MHill replaced entire sorbent boom on 9/24/08.	0.33	0.27	4.02	--	Moderate
70	Coincidental	9/19/2008	--	--	No	--	--	--	--	None	None	Containment system functioning properly.	2.2	1.06	4.86	--	Light
71	Weekly	9/29/2008	8:30	5:15	No	--	--	--	--	At upriver-channelward corner of containment, sorbent boom displaced. Along downriver leg of containment large section of sorbent boom missing.	None	NRC contacted to repair sorbent boom. NRC repaired and adjusted containment system.	4.15	3.36	7.62	COP	Light

Table 1  
Summary of Visual Sheen Observations at Gasco/Siltronic Property Boundary  
12/27/07-6/30/09

Visit No.	Monitoring Period	Date	Time Started	Time Concluded	Sheen Observed?	Inside or Outside Containment System?	Location	Dimensions	Scope/Nature	Boom Maintenance Issues	Debris Issues	Actions Taken	River Elevation	Daily Low	Daily High	Datum	Wave Action
72	Weekly	10/6/2008	12:30	16:30	No	--	--	--	--	Along upriver and downriver legs of containment near shore, sorbent boom outside of oil skirt boom.	None	NRC contacted to repair sorbent boom.	4.46	3.34	6.47	COP	Light
73	Coincidental	10/7/2008	8:30	15:00	No	--	--	--	--	None	None	Containment system functioning properly.	3.63	3.46	6.05	COP	Light
74	Weekly	10/13/2008	11:00	16:30	Yes	Inside / Outside	Inside containment system upriver from Siltronic outfall / Outside containment system along upriver and downriver legs.	3'x4" / 1'x20' (upriver), 1"x2" (downriver)	Spotty / Contiguous (upriver), Blossom (downriver)	None	None	Containment system functioning properly.	2.92	2.85	6.69	COP	Light
75	Weekly	10/14/2008	9:00	15:00	No	--	--	--	--	None	None	Containment system functioning properly.	4.84	3.34	7.03	COP	Light
76	Coincidental	10/15/2008	13:00	17:00	Yes	Outside	Near downriver-shoreward corner of containment system.	3'x4'	Spotty; 4 patches 1" in diameter	None	None	Containment system functioning properly.	6.61	4.02	8.39	COP	Light
77	Coincidental	10/16/2008	8:00	16:00	No	--	--	--	--	None	None	Containment system functioning properly.	4.35	4.26	8.15	COP	Light
78	Coincidental	10/17/2008	7:30	11:30	Yes	Inside	Near downriver-shoreward corner of containment system.	4"x8"	Spotty	None	None	Containment system functioning properly.	5.96	4.22	8.46	COP	Light
79	Weekly	10/21/2008	7:30	9:30	Yes	Inside / Outside	Inside and outside of upriver-shoreward corner of containment system.	1'x2' / 1'x15'	Spotty / Spotty and transitory	None	None	Containment system functioning properly.	3.95	3.9	6.98	COP	Light
80	Coincidental	10/22/2008	9:30	10:30	No	--	--	--	--	None	None	Containment system functioning properly.	4.04	4.01	6.95	COP	Light
81	Coincidental	10/24/2008	10:00	11:30	Yes	Inside / Outside	Inside upriver and downriver-shoreward corners / Outside near downriver-shorward corner and along upriver leg of boom.	1'x1' / 1'x3' (downriver), 3'x15' (upriver)	Spotty / Spotty (downriver), Contiguous (upriver)	None	None	Containment system functioning properly.	3.24	3.24	6.57	COP	Light
82	Weekly	10/27/2008	7:30	17:00	Yes	Outside	Near upriver-shoreward corner of containment system.	1'x8'	Spotty	None	None	Containment system functioning properly.	3.9	3.02	7.27	COP	Light
83	Coincidental	10/28/2008	7:40	15:00	Yes	Inside	Near upriver-channelward corner of containment system.	1'x4'	Spotty	None	None	Containment system functioning properly.	4.683	4.215	7.83	COP	Light
84	Coincidental	11/3/2008	8:00	15:20	Yes	Outside	Along upriver leg of containment system.	3'x10'	Spotty	None	None	Containment system functioning properly.	4.69	3.98	7.54	COP	Light
85	Coincidental	11/6/2008	13:00	16:30	No	--	--	--	--	None	None	Containment system functioning properly.	6.15	4.43	6.57	COP	Light
86	Weekly	11/10/2008	13:30	16:30	No	--	--	--	--	Along downriver leg of containment, ~10 ft of sorbent boom outside of oil skirt boom and ~2 ft gap of sorbent boom near downriver shore during high tide.	None	NRC contacted to repair and reconfigure sorbent boom.	8.69	5.41	8.69	COP	Light
87	Coincidental	11/12/2008	8:00	11:00	No	--	--	--	--	Along downriver leg of containment, ~10 ft of sorbent boom outside of oil skirt boom.	None	NRC contacted to repair and reconfigure sorbent boom.	6.84	6.06	10.33	COP	Moderate
88	Weekly	11/18/2008	13:00	16:00	Yes	Inside	Near downriver-shoreward corner of containment system.	2'x4'	Spotty	Along downriver leg of containment, ~20 ft of sorbent boom outside of oil skirt boom.	Two logs caught under upriver leg of containment system.	NRC contacted to repair and reconfigure sorbent boom and remove logs. NRC repaired and reconfigured sorbent boom and removed logs on 11/20/08.	6.68	5.97	8.11	COP	Light
89	Weekly	11/24/2008	14:00	16:00	No	--	--	--	--	Along downriver leg of containment, ~15 ft of sorbent boom outside of oil skirt boom.	Logs and debris caught in and around boom at multiple locations.	NRC contacted to repair and reconfigure sorbent boom and remove logs and debris. NRC made necessary adjustments and added additional anchor point at midpoint of boom on 12/5/08.	8.19	5.02	8.27	COP	Light
90	Weekly	12/6/2008	14:00	15:00	No	--	--	--	--	Upriver leg of containment sagging at midpoint.	None	NRC added additional anchor point at midpoint of boom.	--	--	--	--	Light
91	Weekly	12/10/2008	15:00	17:00	No	--	--	--	--	Upriver leg of sorbent boom disconnected. Along downriver leg of containment, ~20 ft of sorbent boom outside of oil skirt boom.	None	NRC contacted to repair and reconfigure sorbent boom. NRC reconfigured sorbent boom and added 2 bales on 12/11/08.	7.7	4.54	8.44	COP	Light
92	Weekly	12/16/2008	14:30	17:00	No	--	--	--	--	None	None	Containment system functioning properly.	5.86	5.68	8.46	COP	Light
93	Weekly	12/27/2008	13:30	16:00	No	--	--	--	--	Along downriver leg of containment, ~10 ft of sorbent boom outside of oil skirt boom.	None	Containment system functioning properly.	7.53	5.55	9.46	COP	Light

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12/27/07-6/30/09

Visit No.	Monitoring Period	Date	Time Started	Time Concluded	Sheen Observed?	Inside or Outside Containment System?	Location	Dimensions	Scope/Nature	Boom Maintenance Issues	Debris Issues	Actions Taken	River Elevation	Daily Low	Daily High	Datum	Wave Action
94	Weekly	12/31/2008	14:00	16:00	No	--	--	--	--	Along downriver leg of containment, ~20 ft of sorbent boom outside of oil skirt boom and first 10 ft of sorbent boom missing at shoreward end.	None	Containment system functioning properly.	9.34	9.3	10.54	COP	Light
95	Coincidental	1/5/2009	10:51	11:00	No	--	--	--	--	Containment system not in proper position.	None	NRC contacted to reposition boom. NRC made necessary adjustments and replaced 14 bales on 1/6/08.	12.53	11.71	12.79	COP	Moderate
96	Weekly	1/7/2009	14:00	17:00	No	--	--	--	--	None	None	Containment system functioning properly.	14.24	12.46	14.95	COP	Moderate
97	Coincidental	1/9/2009	8:00	10:00	No	--	--	--	--	Along downriver leg of containment, first 5 ft of sorbent boom missing at shoreward end.	None	Containment system functioning properly.	15.5	14.93	16.2	COP	Light
98	Weekly	1/12/2009	11:00	17:00	No	--	--	--	--	None	Along downriver leg, log caught in containment system. Along upriver leg outside of containment, much debris accumulation.	Containment system functioning properly.	11.07	10.97	12.24	COP	Light
99	Coincidental	1/13/2009	8:00	10:00	No	--	--	--	--	None	Along downriver leg, log caught in containment system. Along upriver leg outside of containment, much debris accumulation.	Containment system functioning properly.	11.65	10.81	11.82	COP	Light
100	Coincidental	1/14/2009	8:00	17:00	No	--	--	--	--	None	Along downriver leg, log caught in containment system. Along upriver leg outside of containment, much debris accumulation.	Containment system functioning properly.	10.23	10.05	11.27	COP	Light
101	Coincidental	1/15/2009	8:00	11:30	No	--	--	--	--	None	Along downriver leg, logs caught in containment system. Along upriver leg outside of containment, much debris accumulation.	Containment system functioning properly.	11.44	10.55	11.66	COP	Light
102	Coincidental	1/16/2009	8:15	8:23	No	--	--	--	--	None	Along downriver leg of containment, wood debris tangled in boom.	NRC removed debris and adjusted containment system on 1/21/09.	11.18	10.32	11.48	COP	Moderate
103	Weekly	1/23/2009	10:00	11:50	No	--	--	--	--	None	None	Containment system functioning properly.	7.08	6.98	8.83	COP	Light
104	Weekly	1/26/2009	8:00	9:30	No	--	--	--	--	None	None	Containment system functioning properly.	7.26	6.46	8.83	COP	Light
105	Coincidental	1/28/2009	8:00	10:00	No	--	--	--	--	None	None	Containment system functioning properly.	8.16	7.12	8.84	COP	Light
106	Weekly	2/2/2009	8:30	12:00	No	--	--	--	--	None	None	Containment system functioning properly.	7.63	4.84	7.82	COP	Light
107	Weekly	2/11/2009	8:30	13:30	No	--	--	--	--	Along upriver and downriver legs of containment, ~10 ft of sorbent boom outside of oil skirt boom.	None	Containment system functioning properly.	7.82	5.45	9.24	COP	Light
108	Coincidental	2/13/2009	8:00	16:00	No	--	--	--	--	Along upriver and downriver legs of containment, ~10 ft of sorbent boom outside of oil skirt boom.	None	Containment system functioning properly.	7.13	5.87	9.27	COP	Moderate
109	Weekly	2/19/2009	7:00	16:30	No	--	--	--	--	Along upriver and downriver legs of containment, ~10 ft of sorbent boom outside of oil skirt boom.	Along upriver leg of containment, large log and debris caught in boom.	NRC contacted to remove log.	5.29	4.26	7.1	COP	Light
110	Coincidental	2/20/2009	7:00	15:30	Yes	Inside	Near downriver-shoreward corner of containment system.	10'x20'	Spotty	Along upriver and downriver legs of containment, ~10 ft of sorbent boom outside of oil skirt boom.	Along upriver leg outside of containment, large log and debris accumulation.	NRC informed. NRC removed woody debris. Containment system functioning properly.	5.32	4.31	7.27	COP	Light
111	Weekly	2/23/2009	7:00	16:00	No	--	--	--	--	Along upriver and downriver legs of containment, ~10 ft of sorbent boom outside of oil skirt boom.	Along upriver leg outside of containment, large log and debris accumulation.	NRC informed.	5.66	4.76	8.39	COP	Moderate
112	Weekly	3/4/2009	13:00	16:00	No	--	--	--	--	Along upriver and downriver legs of containment, ~10 ft of sorbent boom outside of oil skirt boom.	Along upriver leg outside of containment, wood debris accumulation.	Containment system functioning properly.	7.77	6.39	9.19	COP	Moderate
113	Weekly	3/13/2009	12:00	14:30	No	--	--	--	--	Along upriver and downriver legs of containment, ~10 ft (upriver) and ~20 ft (downriver) of sorbent boom outside of oil skirt boom.	Along upriver and downriver legs outside of containment, large logs and debris accumulation.	Anchor QEA staff made repairs where possible from shore. NRC notified to finish repairs.	5.89	5.14	8.53	COP	Light
114	Weekly	3/19/2009	7:00	8:00	Yes	Inside	Near downriver-shoreward corner of containment system.	1'x1'	Spotty; 6 small patches 1-2" in diameter	Along upriver and downriver legs of containment, small sections of sorbent boom outside of oil skirt boom.	Along upriver leg, large log caught outside of containment system.	Containment system functioning properly.	6.75	5.59	7.51	COP	Moderate
115	Weekly	3/23/2009	15:00	17:00	No	--	--	--	--	Along downriver leg of containment, section of sorbent boom wrapped around oil skirt boom.	Along upriver leg, logs and debris caught outside of containment system.	Containment system functioning properly.	7.62	5.32	7.76	COP	Moderate

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12/27/07-6/30/09

Visit No.	Monitoring Period	Date	Time Started	Time Concluded	Sheen Observed?	Inside or Outside Containment System?	Location	Dimensions	Scope/Nature	Boom Maintenance Issues	Debris Issues	Actions Taken	River Elevation	Daily Low	Daily High	Datum	Wave Action
116	Coincidental	3/26/2009	16:30	17:30	No	--	--	--	--	Along downriver leg of containment, section of sorbent boom wrapped around oil skirt boom.	Along upriver leg, logs and debris caught outside of containment system.	Containment system functioning properly.	7.73	6.6	8.88	COP	Light
117	Coincidental	3/27/2009	8:00	16:00	Yes	Inside	Near downriver-shoreward corner of containment system.	2'x6'	Spotty; very thin	Along downriver leg of containment, ~10 ft of sorbent boom wrapped around oil skirt boom. Along upriver leg of containment, ~ 5 ft of sorbent boom outside of oil skirt boom.	Along upriver leg, debris caught outside of containment system.	NRC removed woody debris. Containment system functioning properly.	7.7	7.44	9.56	COP	Light
118	Weekly	3/30/2009	15:30	17:00	No	--	--	--	--	Along downriver leg of containment, section of sorbent boom wrapped around oil skirt boom. Along upriver leg outside of containment, two ~ 5 ft sections of sorbent boom outside of oil skirt boom.	Along upriver leg, debris caught outside of containment system.	Containment system functioning properly.	9.4	7.74	9.9	COP	Light
119	Coincidental	4/1/2009	8:00	10:30	No	--	--	--	--	Along downriver leg of containment, section of sorbent boom wrapped around oil skirt boom. Along upriver leg outside of containment, two ~ 5 ft sections of sorbent boom outside of oil skirt boom.	Along upriver leg, debris caught outside of containment system.	Containment system functioning properly.	8.5	6.64	8.73	COP	Moderate
120	Coincidental	4/2/2009	8:00	16:00	No	--	--	--	--	Along downriver leg of containment, section of sorbent boom wrapped around oil skirt boom. Along upriver leg outside of containment, ~20 ft section of sorbent boom outside of oil skirt boom.	Along upriver leg, debris caught outside of containment system.	Containment system functioning properly.	8.17	7.39	9.34	COP	Moderate
121	Coincidental	4/3/2009	7:30	9:30	No	--	--	--	--	Along downriver leg of containment, section of sorbent boom wrapped around oil skirt boom. Along upriver leg outside of containment, ~30 ft section of sorbent boom outside of oil skirt boom.	Along upriver leg of containment, wood and debris caught in boom.	Containment system functioning properly.	7.41	6.81	8.49	COP	Light
122	Weekly	4/8/2009	9:00	14:00	No	--	--	--	--	None	None	Containment system functioning properly.	8.11	6.8	9.5	COP	Moderate
123	Weekly	4/14/2009	13:00	16:30	No	--	--	--	--	Along upriver and downriver legs of containment, ~5 ft of sorbent boom outside of oil skirt boom.	Along upriver leg of containment, wood and debris caught in boom.	Containment system functioning properly.	10	9.39	10.4	COP	Moderate
124	Weekly	4/21/2009	7:00	9:00	No	--	--	--	--	Along downriver leg of containment, section of sorbent boom wrapped around oil skirt boom. Along upriver leg of containment, ~10 ft of sorbent boom outside of oil skirt boom.	Along upriver leg of containment, wood and debris caught in sorbent boom and outside of oil skirt boom.	Containment system functioning properly.	9.14	8.34	9.54	COP	Light
125	Weekly	4/27/2009	8:00	18:00	No	--	--	--	--	Along downriver leg of containment, section of sorbent boom wrapped around oil skirt boom. Along upriver leg of containment, ~10 ft of sorbent boom outside of oil skirt boom.	None	Containment system functioning properly.	12.33	10.9	12.35	COP	Light
126	Coincidental	4/29/2009	9:30	15:30	No	--	--	--	--	Along downriver leg of containment, section of sorbent boom wrapped around oil skirt boom. Along upriver leg of containment, ~10 ft of sorbent boom outside of oil skirt boom.	Along upriver leg of containment, debris caught in sorbent boom and inside containment area, debris accumulation along shore.	Containment system functioning properly.	11.36	10.09	11.42	COP	Light
127	Weekly	5/5/2009	7:30	9:30	No	--	--	--	--	Along downriver leg of containment, ~10 ft of sorbent boom wrapped around oil skirt boom. Along upriver leg of containment, ~5 ft of sorbent boom outside of oil skirt boom.	Along upriver leg outside of containment and along downriver leg inside of containment, wood and debris accumulation.	Containment system functioning properly.	9.13	7.65	10.01	COP	Light
128	Coincidental	5/7/2009	12:00	15:30	No	--	--	--	--	Along downriver leg of containment, section of sorbent boom wrapped around oil skirt boom. Along upriver leg of containment, ~5 ft of sorbent boom outside of oil skirt boom.	Along upriver leg outside of containment and along downriver leg inside of containment, debris accumulation.	Containment system functioning properly.	12.17	10.9	12.93	COP	Light

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129	Weekly	5/11/2009	13:00	16:00	No	--	--	--	--	Along downriver leg of containment, section of sorbent boom wrapped around oil skirt boom. Along upriver leg of containment, ~5 ft of sorbent boom outside of oil skirt boom.	Along upriver leg outside of containment, debris accumulation.	Containment system functioning properly.	9.78	9.49	10.86	COP	Light
130	Coincidental	5/12/2009	7:00	9:00	No	--	--	--	--	Along downriver leg of containment, section of sorbent boom wrapped around oil skirt boom. Along upriver leg of containment, ~5 ft of sorbent boom outside of oil skirt boom.	Along upriver leg outside of containment, debris accumulation.	Containment system functioning properly.	10.93	9.89	10.95	COP	Light
131	Weekly	5/18/2009	13:00	17:00	No	--	--	--	--	Along downriver leg of containment, ~10 ft of sorbent boom wrapped around oil skirt boom.	Along upriver and downriver legs of containment, logs and debris caught in booms.	NRC removed woody debris on 5/19/09.	9.85	9.46	10.38	COP	Light
132	Weekly	5/27/2009	12:40	16:35	No	--	--	--	--	None	None	Containment system functioning properly.	12.83	12.4	13.49	COP	Light
133	Weekly	6/5/2009	15:00	17:00	No	--	--	--	--	Along downriver leg of containment, sorbent boom wrapped around oil-skirt boom.	Along upriver leg of containment, log caught in boom and debris accumulation along outside of boom.	Containment system functioning properly.	12.81	12.74	13.44	COP	Light
134	Weekly	6/10/2009	8:00	16:00	No	--	--	--	--	Along downriver leg of containment, sorbent boom wrapped around oil-skirt boom.	None	Containment system functioning properly.	13.15	12.69	13.56	COP	Light
135	Coincidental	6/11/2009	7:00	15:30	No	--	--	--	--	Along downriver leg of containment, sorbent boom wrapped around oil-skirt boom.	Along upriver leg of containment, debris accumulation along outside of boom.	Containment system functioning properly.	11.62	11.19	12.91	COP	Light
136	Coincidental	6/12/2009	9:45	10:45	No	--	--	--	--	Along downriver leg of containment, sorbent boom wrapped around oil-skirt boom.	Along upriver leg of containment, debris accumulation along outside of boom.	Containment system functioning properly.	--	--	--	--	Light
137	Weekly	6/15/2009	6:45	15:30	Yes	Inside / Outside	Inside containment structure along shoreline near downriver leg / Outside containment structure along upriver and downriver legs near shore.	0.5'x15' / 2'x10' (upriver), 1'x3' (downriver)	Spotty / Contiguous (upriver), Spotty (downriver)	Along downriver leg of containment, sorbent boom wrapped around oil-skirt boom.	None	Containment system functioning properly. Sheen disapated by afternoon.	9.01	8.37	9.72	COP	Light
138	Coincidental	6/16/2009	7:00	15:30	No	--	--	--	--	Downriver leg of containment structure not in proper position and along upriver leg ~3ft of sorbent boom outside of oil-skirt boom.	None	Anchor QEA representative moved containment structure back into proper position and reconfigured sorbent boom.	8.57	7.98	9.39	COP	Light
139	Coincidental	6/17/2009	7:00	15:30	No	--	--	--	--	None	None	NRC made necessary adjustments to containment system on 6/17/2009.	8.7	8.04	9.88	COP	Light
140	Coincidental	6/18/2009	13:30	16:30	Yes	Inside	Along shoreline near downriver leg of containment system.	0.5'x3'	Very spotty	None	None	Containment system functioning properly.	8.08	7.57	9.45	COP	Light
141	Coincidental	6/19/2009	7:00	15:30	No	--	--	--	--	None	None	Containment system functioning properly.	9.83	8.83	10.39	COP	Light
142	Weekly	6/22/2009	7:00	17:30	Yes	Outside	Along upriver leg of containment structure.	5'x10'	Spotty	None	None	Containment system functioning properly.	8.48	8.46	11.03	COP	Light
143	Coincidental	6/23/2009	6:45	17:45	No	--	--	--	--	None	None	Containment system functioning properly.	10.45	8.66	11.1	COP	Light
144	Coincidental	6/24/2009	7:00	17:30	No	--	--	--	--	None	None	Containment system functioning properly.	10.16	9.64	11.54	COP	Light
145	Coincidental	6/25/2009	7:00	17:30	No	--	--	--	--	None	None	Containment system functioning properly.	9.84	9.64	11.54	COP	Light-Moderate
146	Coincidental	6/26/2009	7:00	17:30	Yes	Inside	Along upriver and downriver legs of containment near shoreline.	~1'x4'	Very Spotty	Along upriver, channelward corner of containment structure, sorbent boom disconnected.	None	NRC contacted to repair sorbent boom.	10.78	8.7	10.94	COP	Light
147	Coincidental	6/27/2009	7:00	12:00	No	--	--	--	--	Along upriver, channelward corner of containment structure, sorbent boom disconnected.	None	Containment system functioning properly.	9.19	7.9	9.96	COP	Light-Moderate
148	Weekly	6/29/2009	13:00	17:00	No	--	--	--	--	None	None	NRC repaired sorbent boom and replaced 2 bales.	7.89	7.49	10.02	COP	Light
149	Coincidental	6/30/2009	7:00	15:30	No	--	--	--	--	None	None	Containment system functioning properly.	7.3	6.79	9.38	COP	Moderate



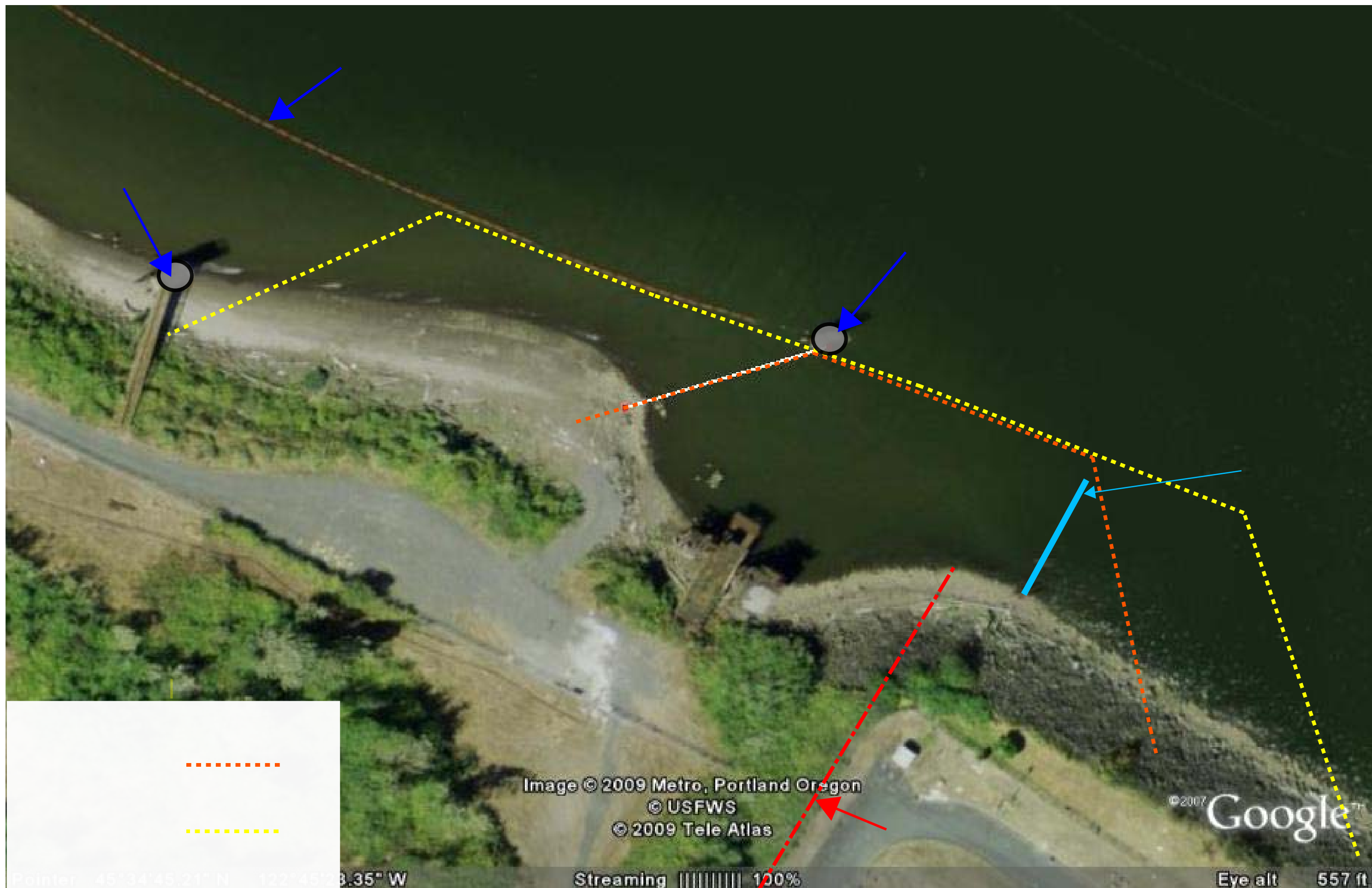


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Pointer: 45°34'45.21" N 122°45'28.35" W

Streaming 100%

Eye alt 557 ft

## ATTACHMENT 3

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# Gasco Sediments Visual Survey - Observation Form

Observation Number: \_\_\_\_\_ Tidal Stage: \_\_\_\_\_ Date: \_\_\_\_\_  
 River Elevation: \_\_\_\_\_ Flow Velocity: \_\_\_\_\_ Time: \_\_\_\_\_

## CURRENT CONDITIONS

<b>Conditions: (circle)</b>	Wind From:	N	NE	E	SE	S	SW	W	NW	Light	Medium	Heavy
	Weather:	Sunny		Cloudy		Rain				Air Temp: _____ F		
											Water Temp: _____ F	
<b>Wave Action Observations (circle):</b>		Light		Moderate		Heavy		Wave Height (crest to trough):		____ . ____ to ____ . ____ ft		
<b>Vessel Traffic:</b>												

## SHEEN/EBULLITION LOCATION INFORMATION

<b>Location &amp; Prox. To Structures:</b>		<b>Water Depth Range:</b>
<b>Northing/Lat:</b>	<b>Easting/Long:</b>	<b>Datum:</b>

## SHEEN OBSERVATIONS

**Blossom** – Observations of the process of a very small amount of product (i.e., a small drop) coming to the water surface and creating a small area (< 1 to 3 ft in diameter) of sheen.

**Contiguous Sheen** – Observations of a larger patch of sheen observed on the surface of the water; and an approximate dimension of the patch will be given.

**Spotty Sheen** - Observations of larger areas of sheen that are comprised of many smaller patches (<1 to 3 ft in diameter) of sheen that may merge or separate over time.

**Small Spots of Sheen** – Observations of isolated small patches (<1 to 3 ft in diameter), potentially representing a recent blossom.

<b>Sheen Type (circle):</b>	Blossom - Contiguous Sheen - Spotty Sheen - Small Spots of Sheen
<b>Sheen Dimension:</b>	

## EBULLITION OBSERVATIONS

<b>Frequency (circle):</b>	Irregular - Frequent - Continuous	
<b>Duration:</b>	<b>Rate (bubbles/min):</b>	<b>Approx. Bubble Size Range (diameter):</b>

## DOCUMENTATION

<b>Photo #s:</b>
<b>Video File Names:</b>
<b>GPS Point Names:</b>

## COMMENTS/ADDITIONAL OBSERVATIONS

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